FIELD CROP ABSTRACTS

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The Commonwealth Bureau of Pastures and Field Crops is located at the Grassland Research Institute, Hurley, and is one of a group of 10 Bureaux and 4 Institutes which together form the Commonwealth Agricultural Bureaux, an organization financed and administered jointly by the various Commonwealth Governments and Dependent Territories. The Commonwealth Agricultural Bureaux produce 26 abstract journals covering the major branches of agricultural and related sciences. The journals and their subscription rates are listed on the back cover.

The Bureau prepares two monthly journals, *Herbage Abstracts* and *Field Crop Abstracts,* for publication by the Commonwealth Agricultural Bureaux, Farnham Royal, Bucks. These journals contain abstracts of the research findings reported in the world scientific literature on annual field crops, pastures, herbage plants and rangelands and provide both a comprehensive guide to current scientific and technological developments in their subjects and a key to the literature published in the past. In addition to abstracts, the Bureau also issues reviews and monographs on selected subjects.

Scope of Field Crop Abstracts: The subjects covered include the agronomy and major aspects of the biology of all annual field crops grown for food, fodder, oil and fibre, and of tobacco. Land use, farming systems, agricultural meteorology and the control of weeds, pests and diseases are dealt with only in so far as they concern the crop coverage.

The Bureau is prepared, on request, to undertake literature searches and to compile bibliographies on subjects within its scope. A list of bibliographies already compiled is published in this journal.

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The address given at the end of abstract citations is that of the first author at the time of writing and is normally where the work was carried out.

Transliteration of Cyrillic script is based on the International Standard ISO/R9 1968 (E).

The titles of periodicals and reports conform where possible to those given in the *World List of Scientific Periodicals* (4th Edn; London: Butterworth) and are listed in *Field Crop Abstracts* Vol. 30, No. 1, on pp. 1-11, they can also be obtained as a separate from the Bureau of Pastures and Field Crops, Hurley, Maidenhead SL6 5LR, price £1.00.

LANGUAGE SYMBOLS

The language symbols used are listed below. An initial capital letter denotes the main language of a paper, a small letter the language of the summary(ies).

Af	Afrikaans	Fi	Finnish	Nl	Dutch, Flemish
Al	Albanian	Fr	French	No	Norwegian
Ar	Arabic	Gr	Greek	Pe	Persian
Be	Belorussian	He	Hebrew	Pl	Polish
Bg	Bulgarian	Hu	Hungarian	Pt	Portuguese
Ch	Chinese	Ia	Interlingua	Ro	Romanian
Cr	Croat	In	Indonesian	Ru	Russian
Cs	Czech	Is	Icelandic	Sh	Serbo-Croat
Da	Danish	It	Italian	Sk	Slovak
De	German	Ja	Japanese	Sn	Slovene
Ee	Estonian	Ko	Korean	Sr	Serbian
En	English	La	Latin	Sv	Swedish
Eo	Esperanto	Li	Lithuanian	Tr	Turkish
Es	Spanish	Lv	Latvian	Uk	Ukrainian
		Ma	Macedonian		

ABBREVIATIONS

The abbreviations used for the names of common units, mathematical operations, chemical elements, etc., are in accordance with British Standard 1991 : 1967. Additional abbreviations used follow the CAB Standard List of Abbreviations, which is published in the Annual Index; a copy may be obtained from the Bureau, price £0.15. In addition, the following are used:

FCA	*Field Crop Abstracts*	*HbA*	*Herbage Abstracts*

CAB STANDARD LIST OF ABBREVIATIONS

AAS	atomic absorption spectrometry
ABA	abscisic acid
a.c.	alternating current
ACTH	adrenocorticotropic hormone
ad lib.	ad libitum
ADP	adenosine diphosphate
a.e.	acid equivalent
a.i.	active ingredient
AI	artificial insemination
alt.	altitude
a.m.	*ante meridiem*
approx.	approximately
aq.	aqueous
ATP	adenosine triphosphate
Aug.	August
av.	average
BOD	biochemical oxygen demand
b.p.	boiling point
c.	circa
CA	controlled atmosphere
cAMP	cyclic adenosine monophosphate
CEC	cation exchange capacity
cf.	compare
CF	crude fibre
CGR	crop growth rate
CNS	central nervous system
COD	chemical oxygen demand
coeff.	coefficient
col.	coloured
conc.	concentrated
const.	constant
CP	crude protein
CR	conception rate
cryst.	crystalline
CSIRO	Commonwealth Scientific and Industrial Research Organization [Australia]
cv.	cultivar
CV	coefficient of variation
d.b.h.	diameter at breast height
d.c.	direct current
DCP	digestible crude protein
DDM	digestible dry matter
DE	digestible energy
Dec.	December
DHIA	Dairyherd Improvement Association
DM	dry matter
diam.	diameter
dil.	dilute
DMSO	dimethyl sulphoxide
DNA	deoxyribonucleic acid
DOCA	desoxycorticosterone acetate
DOM	digestible organic matter
DTA	differential thermal analysis
E.	east
ED	effective dose
EDTA	ethylenediaminetetracetic acid
EEC	European Economic Community
e.g.	for example
Eh	oxidation-reduced potential
ESP	exchangeable sodium percentage
et al.	et alii
f.	*forma*
F	filial generation
F	inbreeding coefficient
FAD	flavin adenine denucleotide
FAO	Food and Agriculture Organization
FCM	fat-corrected milk
FDA	Food and Drug Administration
Feb.	February
FGA	fluorogestone acetate
FMN	flavin mononucleotide
f.p.	freezing point
FSH	follicle stimulating hormone
FSHRH	FSH-releasing hormone
f.sp.	*forma specialis*
FU	food unit/fodder unit
FYM	farmyard manure
g.b.h.	girth at breast height
gen.	genus
GLC	gas-liquid chromatography
GnRH	gonadatropin-releasing hormone
Gram+	Gram positive
Gram−	Gram negative
h^2	heritability
Hb	haemoglobin
HCG	human chorionic gonadatropin
ht.	height
ICSH	interstitial cell stimulating hormone
i.e.	that is
IR	infrared
IU	international unit
IVT	Illini variable temperature
Jan.	January
LAI	leaf-area index
LAR	leaf-area ratio
lat.	latitude
LC	lethal concentration
LD	lethal dose
LH	luteinizing hormone
LHRF	LH-releasing factor
LHRH	LH-releasing hormone
loc.cit.	place cited
long.	longitude
M[small cap]	molar
MA	megestrol acetate
m.a.i.	mean annual increment
MAP	6-α-methyl-17α-acetoxy-progesterone
max.	maximum
m.c.	moisture content
ME	metabolizable energy
MGA	melengestrol acetate
min.	minimum
mol.	molecular
m.p.	melting point
MS	mass spectrometry
MU	mouse unit
N.	north
N[small cap]	normal [concentration]
NAD+	nicotinamide adenine dinucleotide (oxidized form)
NADH	nicotinamide adenine dinucleotide (reduced form)
NADP+	nicotinamide adenine dinucleotide phosphate (oxidized form)
NADPH	nicotinamide adenine dinucleotide phosphate (reduced form)
NAR	net assimilation rate
NE	north-east
NFE	nitrogen-free extract
NMR	nuclear magnetic resonance
Nov.	November
NW	north-west
obs.	observed
Oct.	October
OM	organic matter
opt.	optimum
P	parental generation
P	probability
p.a.	*per annum*
PG	prostaglandin
pH	hydrogen-ion concentration
p.m.	*post meridiem*
PMB	pregnant mare blood
PMS	pregnant mare serum
PMSG	pregnant mare serum gonadotropin
PMU	pregnant mare urine
post-em.	post-emergence
p.p.h.m.	parts per hundred million
p.p.m.	parts per million
ppt.	precipitate
pre-em.	pre-emergence
PVC	polyvinyl chloride
q.v.	which see
RBV	relative breeding value
resp.	respectively
RGR	relative growth rate
RH	relative humidity
RNA	ribonucleic acid
RU	rat unit
S.	south
SAR	sodium absorption ratio
s.d.	standard deviation
SE	south-east
s.e.	standard error
Sept.	September
SNF	solids not fat
sol.	solution
sp.	species
sp.gr.	specific gravity
SSP	soluble sodium percentage
s.t.p.	standard temperature and pressure
str.	strain
SW	south-west
syn.	synonym
TDN	total digestible nutrients
temp.	temperature
TG	thermogravimetry
TLC	thin-layer chromatography
TMV	tobacco mosaic virus
UHT	ultra-high temperature
USDA	United States Department of Agriculture
UV	ultraviolet
var.	variety
VFA	volatile fatty acids
viz.	namely
vol.	volume
v.p.m.	volume per million
vs.	versus
v/v	volume/volume
W.	west
WHO	World Health Organization
wk	week
w.p.	wettable powder
wt.	weight
w/v	weight/volume
w/w	weight/weight
yr	year

April 1977

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CONTENTS

ABSTRACTS

CEREALS

Wheat	15	109	175	243	295	359	421	477	535	613	699	765
Oats	28	117	182	249	302	364	428	483	543	622	703	772
Rye	29	117	183	250	303	366	429	485	544	623	705	772
Triticale	30	118	184	250	–	367	430	485	544	624	705	773
Barley	31	118	184	250	304	367	430	485	545	624	705	773
Wild-rice	–	–	–	–	–	370	433	–	–	–	–	776
Maize	34	121	188	253	308	370	433	488	548	628	710	776
Sweet corn	42	126	194	257	313	376	439	492	555	636	714	780
Rice	42	126	194	257	313	376	439	493	555	637	714	781
Sorghum	51	128	199	261	317	379	442	497	562	641	718	785
Pennisetum typhoides	52	129	200	262	318	379	443	498	563	643	–	–
Panicum miliaceum	52	129	200	–	318	380	443	–	–	643	–	–
Panicum miliare	–	–	–	–	–	–	–	–	–	–	–	–
Eleusine coracana	53	–	–	–	–	380	444	498	–	–	719	785
Minor cereals	–	–	–	–	–	–	–	–	–	–	–	–
Cereals, general	53	130	200	262	319	380	444	499	564	643	720	786

LEGUMES

Soyabeans	55	131	201	264	319	381	445	501	565	645	721	787
Groundnuts	61	135	204	267	323	386	448	504	568	653	723	790
Peas	62	135	205	267	324	386	449	504	569	654	724	–
Vicia spp.	64	138	206	268	326	389	451	506	571	658	726	792
Phaseolus spp.	66	139	207	269	327	390	452	506	572	659	727	793
Vigna spp.	69	143	210	269	330	393	454	509	575	665	730	796
Trifolium spp.	–	–	–	–	–	–	–	–	–	–	–	–
Voandzeia subterranea	–	–	–	–	–	–	–	–	–	–	730	796
Cajanus cajan	–	144	211	271	330	394	–	509	575	666	730	796
Cicer arietinum	69	–	211	271	331	–	454	509	575	666	731	–
Lens esculenta	70	144	–	271	–	394	–	510	576	666	–	796
Lupinus spp.	70	144	211	271	331	394	455	510	576	666	731	796
Minor legumes	–	–	–	–	–	–	–	–	–	–	–	–
Legumes, general	71	145	212	272	332	394	455	510	577	667	731	797

ROOT CROPS

Sugar beet	71	145	213	273	333	395	456	511	578	668	732	798
Fodder beet	73	147	216	277	–	397	–	512	579	670	–	–
Turnips and Swedes	73	147	216	–	336	397	–	512	580	670	734	800
Potatoes	73	147	216	277	336	398	458	513	580	670	734	800
Carrots	–	–	–	–	–	–	461	–	–	–	–	–
Sweet potatoes	84	154	220	280	341	400	461	515	584	673	737	804
Cassava	84	155	220	–	341	401	462	516	585	–	738	805
Yams	84	155	–	280	342	401	–	–	–	–	738	805
Cocoyams	84	–	–	–	–	–	462	–	–	–	–	806
Minor root crops	–	–	–	–	–	–	–	–	–	–	–	–
Root crops, general	–	–	220	–	–	–	462	–	585	–	739	–

FIBRE CROPS

Cotton	85	155	221	280	342	402	463	516	585	673	739	806
Fibre Flax	88	158	223	282	342	403	465	516	587	677	741	808
Hemp	89	159	224	282	342	403	465	516	587	–	741	808
Jute	89	159	224	282	–	–	–	516	588	677	–	808
Minor fibre crops	–	–	–	–	–	–	–	–	–	–	–	–
Fibre crops, general	–	–	–	–	–	–	–	–	–	677	741	808

OILSEED CROPS

Castor	90	160	225	–	344	–	–	516	588	677	–	–
Sesame	90	–	–	282	344	404	465	–	–	678	741	–
Oilseed flax	90	160	225	283	345	–	–	–	588	–	741	–
Safflower	90	161	225	283	345	–	465	518	588	678	742	808
Sunflower	90	161	225	283	345	404	465	518	588	678	742	809
Rape	91	162	226	284	346	405	466	519	590	679	742	810
Minor oilseed crops	–	162	–	–	–	–	–	–	–	–	742	–
Oilseed crops, general	93	–	228	285	348	406	467	521	591	–	743	811

MISCELLANEOUS CROPS

Tobacco	93	163	228	285	348	406	467	521	592	680	743	811
Brassica oleracea	–	–	–	288	–	–	468	–	–	683	745	813
Fodder radish	–	–	–	–	–	–	–	–	–	–	–	–
Buckwheat	95	164	230	289	–	409	–	522	594	683	–	813
Other crops	–	164	–	–	–	–	–	–	–	–	–	–
Miscellaneous crops, general	–	–	230	289	–	–	–	–	594	–	–	–

GREEN MANURES	95	164	–	–	–	409	–	523	–	–	–	–

CROP BOTANY

Physiology	97	165	231	290	352	410	468	524	594	684	746	814
Chemical composition	99	166	233	290	353	411	470	525	598	687	748	816
Morphology and anatomy	100	167	–	291	354	–	470	525	599	687	749	817
Environmental factors	100	167	233	291	354	412	470	525	599	688	749	817
Nodulation	–	–	–	–	354	–	471	526	600	688	750	818
Radiobiology	–	167	234	–	–	–	–	–	601	–	750	–
Taxonomy	101	–	234	–	–	–	–	–	–	–	750	–
Techniques and apparatus	101	167	234	291	354	412	471	526	601	689	750	818
Miscellaneous	103	168	235	292	355	413	472	527	602	691	752	820

WEEDS	103	169	–	293	–	414	472	527	602	691	–	–
SURVEYS AND LAND USE	–	169	235	293	355	414	473	528	603	692	752	820
FARMING SYSTEMS	103	169	236	293	355	414	473	528	603	692	753	820
SOIL AND WATER CONSERVATION	–	170	237	293	–	415	474	530	606	693	754	822
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Page	*Abstract*	*Line*	
35	204	3	Insert '*Institut*' before '*Mekhanizatsii*'
82	662	1	For '*ET* AL.' read '*ET AL.*'
82	663	1	For '*ET* AL.' read '*ET AL.*'
96	792	8	For '5' read 'five'
146	1267	1	For (*ET* AL.) read (*ET AL.*)
156	1363	1	For (*ET* AL.) read (*ET AL.*)
158	1379	1	For (*ET* AL.) read (*ET AL.*)
536	5047	7	Insert 'Kopara,' after 'Aotea'
751	7085	5	Insert '*Buchele*' before '*W.F.*'